# HARDCOPY

An ABE's ACEs Publication

July/August 1988

## Printer Issue:

MX-80 Speedup

How to Care for your Dot Matrix Printer

Ascii code tuturial

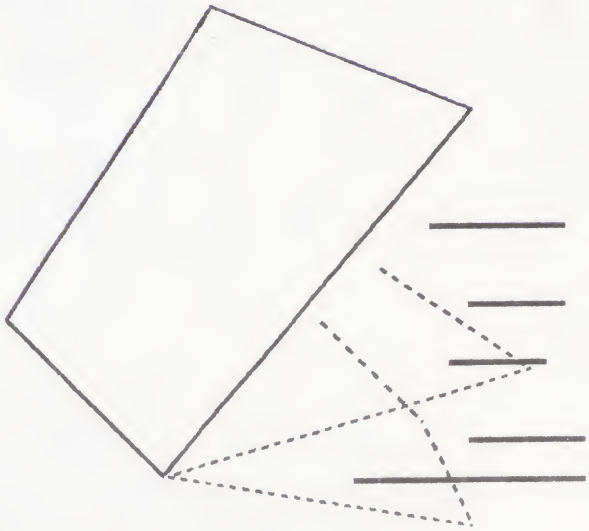
PLUS:

Data Manager ST Tips

VCR Hook-up tips

Error Messages Atari Never Told you about

## Beat the Summer Heat!



With HARDCOPY!

# The President's Report

## by Paul Grover

Just a few quick notes about a change and some needs for the club.

A new format, proposed by the Executive Board and discussed by members present at the July meeting, for our next meeting on August 13th will be as follows:

| | |
|---|---|
| Doors Open | 12:30 PM |
| 8 Bit I/O, demo, or program | 1:15 PM |
| Short business meeting | 2:00 PM |
| ST I/O demo, or program | 2:15 PM |

I look forward to any and all comments on the new format and anyone with some suggestions for demos or programs for the 8 or 16 bit machine, please contact me or Rick Brodeur. This includes any new or old programs you would like to see or have shown to the group.

Another vital change that we can make happen is to start some SIGs (Special Interest Groups), either application or hardware; for example: Telecommunications, Modem, Word Processing, Data Base, Spread Sheet, Graphics, Hard Drive, 8 bit, or ST.

These SIGs are very important aspect which ABE's ACEs has never had to any great extent. It only takes someone to start one and before you know it, others will be joining in. It does not have to be a long term SIG; you might only need to meet a couple of times or your group might meet once or twice a month; or once every couple of months, depending on the group's interest and needs.

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**"...start one and before you know it, others will be joining in."**

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In a nutshell, it is up to all of us to make this club what we want it to be.

With the support that has been given to the club from Atari and other manufacturers recently, especially 8 bit, the club is the only support you may ever get!!!

# Printer Control Codes - A Tutorial for 8 bit and ST

## by Gary Hilbert

This mini-tutorial is intended mainly for people who need to learn about controlling the various special effects their printer manufacturer said were in there...somewhere. Usually your printer manual and the software manual both include some information but it is rarely consistent in syntax and often difficult to combine the advice from both sources.

In most cases you probably use commercial software with printer drivers that allow your printer to do the things the software is capable of. Some people use software that allows you to manually imbed printer control codes into the text or data to take control of special printer functions. This may be necessary when you want to produce an effect your printer has, but is not part of the software's or printer driver's normal repetoire. Typical software that allows you this extra freedom include:

AtariWriter or SpeedScript for the 8-bits ST Writer, microEMACS, SwiftCalc, or DataManager for the 16-bits ...and I'm sure there are many others.

Fundamentally, it is ALWAYS necessary to imbed the printer control codes into the stream of "normal" data going to your printer. This is what the software (and its printer drivers) do

for you on an automatic basis without your intervention. When you want something that isn't built-in, you must determine what printer control codes to send and how to cause the program to send these special printer control codes along with your text or data.

How to determine what to send: Everything goes back to the ASCII (American Standard Code for Information Interchange) codes which you should have if you want to get anywhere. Most printer, modem and programming manuals include the ASCII data. It is important for you to understand the relationship between the ASCII decimal value and the character it represents. Only the ASCII decimal values between 32 and 126 represent standard alphabetical characters, numbers and punctuation marks. The low numbers between 0 and 31 were traditionally used by teletype machines as...you guessed it , "control codes". Printer manufacturers still follow this method. The problem is that your keyboard cannot directly develop these values therefore you have a two key combination. For example the ASCII decimal value 13 is achieved by holding down the Control key and pressing the m key (ctrl-M or ^M ). Instruction manuals often use the symbol ^ to indicate the control key, although some authors will also use ctrl. When an Epson compatible printer gets this, it thinks, aha...time for ye olde carriage return. The ASCII decimal value 15 is achieved by pressing ctrl-O (^O); which will cause a switch to condensed printing (17 char/inch) on Epson and IBM compatible printers. Your printer manual should have complete tables listing the available features and what codes to use to implement these features.

The fly in the ointment is that there are only 26 letters you can combine with the ctrl key and most printer manufacturers now include more features than that. Thus we also get into use of the escape key <ESC>. A large number of printer codes have two or three elements as indicated in the Star Elite example below. Whenever you can't use a ctrl-something direct, you always use <ESC> combined with one or two other items.

The cockroach in the ointment is that many printer manufacturers are too pig headed to agree to a mutually compatible set of codes. The Epson printers have established a widely used sphere of compatibility due to their early popularity and widespread use. Many, but not all, printers have some Epson compatibility. This partial compatibility explains why your printer can do some, but not all, of the things the software is capable of. This is the real reason that printer drivers exist. If programmers could count on all printers reacting the same way, then all these codes could be built into the program.

Yoicks!! I'm glad there's nothing else in our ointment....whats that you say about laser printers with 8 element control sequences...is that a dog in the ointment??

How to cause the software (word processor/ spreadsheet etc) to send it: Depending on the language used, and the possibility that some combination key presses may already be in use for program features, the programmer must somehow accept your instructions and translate them into valid printer control codes.

Unfortunately, there are many methods that software writers use to distinguish between program commands, normal text, and printer control codes. For example with AtariWriter AND ST Writer you type your normal text until its time for a special printer effect, lets say that you want the next block of text to be in Elite style print at 12 characters per inch. You would type the following:

^O27 ^O66 ^O2 to turn on Elite print (12 characters/inch) and ^O18 to return to Pica print (10 cpi).

If you have a properly setup printer driver, ST Writer will allow you to enter Control-G 8 to turn on Elite printing. In other words, the

printer driver translates your ^G8 into ^O27 ^O66 ^O2 which ST Writer then translates into printer control code. The built-in sizes in AtariWriter are ^G1 (for pica), ^G2 (for condensed 16.7cpi), and ^G3 (for proportional spacing). To get Elite with AtariWriter you MUST use the manual method (imbedding ^O27 ^O66 ^O2 within your text) since its printer drivers do not allow this option.

In trying to determine what to enter manually there are at least three translations for you to deal with mentally:

I. The first complication arises when your printer is schizophrenic, that is, it can "emulate" one or several other brands or models of printers. For example, my Star Micronics SG10 has a "Star" and an "IBM" mode controllable via "DIP" switch settings. The STAR mode is highly Epson compatible. Each printer mode (emulation) can have different printer control codes for the same effect.

Let's examine the several methods available to initiate a switch to Elite print ( 12 characters per inch) in their full and gory detail for my particular brand of printer. This is taken directly from the Star manual, page 160.

STAR mode direct <ESC> "B" 2 STAR decimal ASCII 27 66 2 STAR hex ASCII 1B 42 02

IBM mode direct <ESC> "M"

IBM decimal ASCII 27 77

IBM hex ASCII 1B 4D

II. Secondly, there is the fact that the Atari word processors expect manually entered printer codes to be preceeded by a ^O (which is not a valid alphabetical expression that you enter on the keyboard by holding down the Control key and depressing the letter o at the same time). When you enter this you see a red capital O on the screen to let you see where you have control codes entered. The real confusion arrives when you realize that not all programs use a ctrl-O (^O) to designate that the following item is a printer control code.

In SwiftCalc you must type the ^ punctuation symbol which you obtain by entering a shifted 6. This symbol is translated by SwiftCalc to actually serve as the first part of the ctrl-O combo needed to turn on condensed print. In other words, you would enter ^O (both of which ARE valid alphabetical chararcters) in the printer control dialog box. The program then converts them into the appropriate control codes.

If you wanted to add printer control to a BASIC program you would do the following:

10 LPRINT CHR$(27) CHR$(66) CHR$(2);

This will achieve the same switch to Elite as illustrated above for ST Writer. Note that BASIC is also using the decimal ASCII version of the printer control code. Other programs have their own methods.

III. The final translation pertains to the numbers behind the ^O; the 27, the 66 and the 2. In the case of AtariWriter and ST Writer you must use these "decimal" ASCII values when you enter printer codes into your text OR when you are editing the printer driver itself. Other programs may use the "direct" or "hex" codes.

Programs such as SpeedScript (8-bit) and microEMACS (16-bit) utilize the STAR mode direct method to invoke ELITE printing as follows:

STAR mode direct <ESC> "B" 2 which is entered as ------>> esc B ctrl-B

Neither program allows you to just press the esc key. That would be too easy. For SpeedScript you must press the esc key TWICE for it to count once as a printer code. I believe it then allows you to directly enter the letter B and the ctrl-B combo keypress. microEMACS on the other hand, always wants you to press ctrl-Q before the esc key. It also wants a ctrl-Q before any ctrl-key combos that represent a printer code.

The terminology in the STAR book is terrible. For the second element in a string when they show a letter or number enclosed in quotes ( "B" ) this means you merely press that letter on your keyboard...and DO NOT enter any quote marks. When a third element exists it is usually a small number such as 0, 1, or 2. What they mean here is that you must translate the number into its ASCII decimal value and then look up in the table the appropriate control-key combo to enter that on your keyboard.

It is my intention to publish a fairly complete set of OKIMATE 10 and Star SG10 printer control codes in the next issue of ABEs ACEs HARDCOPY. If I feel ambitious, I can borrow Hewlett-Packard Thinkjet and HP LaserJet manuals from work and include them in future issues. Other members can follow up with similarly formatted articles pertaining to their brand of printer. If we all list the features in the same order, we should eventually have a pretty good reference work for home-brew programmers and people interested in buying a new printer.

# On Screen Totals with Data Manager ST

A "how to" feature for owners of the program

by Dennis John

DataManager ST is one of my favorite programs. A powerful yet easy-to-use database much like the old Synfile+ I used to use on my 8-bit Atari. The big advantages DataManager has over SynFile are speed and size. While a sort on SynFile might take as much as thirty minutes (on disk), DataManager can do the same sort in one or two seconds! (in RAM)

No program is perfect however, and DataManager is missing one basic function or feature that SynFile had... the ability to display totals of any number of numeric/calculated fields on screen. To be sure, DataManager has very powerful number crunching functions, and the program is only too happy to PRINT OUT the totals for you, but many times I just want to SEE the totals without running a lot of paper through my printer. It's faster, and cheaper.

The fact is, while not mentioned in the instruction manual, you can set up your databases with this program, so that you will indeed get on-screen totals. The following short tutorial assumes you have used DataManager, and are familiar with the steps involved in creating your own database with the program.

One of the databases I set up with DataManager was a checking account. The program prints my checks and at the same time, tracks all the information I need for tax purposes and so on. The one thing I wanted to include with this database was a running account balance. To do this, I needed to create a field which would carry forward from one record to the next, and be adjusted as deposits were made and checks were written. Here's how it's done...

First, create all of the basic parts of your database including all numeric and calculated fields. Your special running total field should be one of the last you create. In the case of my checking account database, I had fields for the AMOUNT of the check, DEPOSIT amounts, money card CASH withdrawals and SERVICE CHARGEs. I then created my new field which I called BALANCE. Since this was a calculated field, I ended up at the CALCULATION ENTRY AND EDIT screen (see figure 1).

On the left, the program displays all of the numeric and calculated fields with which you can work. Next to each field name is its

number. AMOUNT was the 3rd field in my database for example. The problem was, when I went to create the BALANCE field, it was not listed as one of my choices. At this point, DataManager will not let you use the field you are creating in your calculations. What you have to do is, enter any bogus calculation you want in the THEN area and click on OK. Now you can go back and VIEW the CALCULATIONS of this field. You will be brought right back to this same screen, but this time, BALANCE will be displayed along with its field number, in this case 32.

You can now use BALANCE in your calculation. The formula I used in this case was P32 (the BALANCE from the previous record) -C3 (AMOUNT of this check) +C14 (any DEPOSITs) -C16 (any cash I withdrew with a money card) -C31 (any bank SERVICE CHARGEs). With this formula, the BALANCE field will display ON YOUR SCREEN, your current account balance (see figure 2). Refer to page 55 of the DataManager manual for more information about the P and C functions.

This little trick has many uses. For example, I use DataManager to track all invoices for my photography studio. With a special RUNNING TOTAL field, I'm able to display on screen, the total for any group of invoices I choose. If I wish to see how much business I've done with a specific company, I just search for all invoices to that company and the RUNNING TOTAL field displays the total.

One word of caution at this point. When you do a search, and display a new group of records, DataManager does NOT automatically recalculate all of your fields. You will have to get in the habit of pressing the F5 function key to force the program to recalculate. In that way you'll be sure the figures displayed are correct.

That's about it. If anyone has any problems with setting this up, feel free to contact me at a meeting or via the club's BBS.

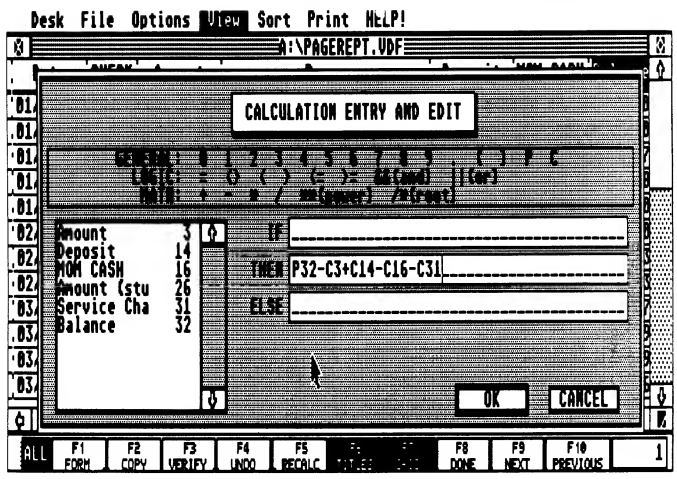



Figure #1

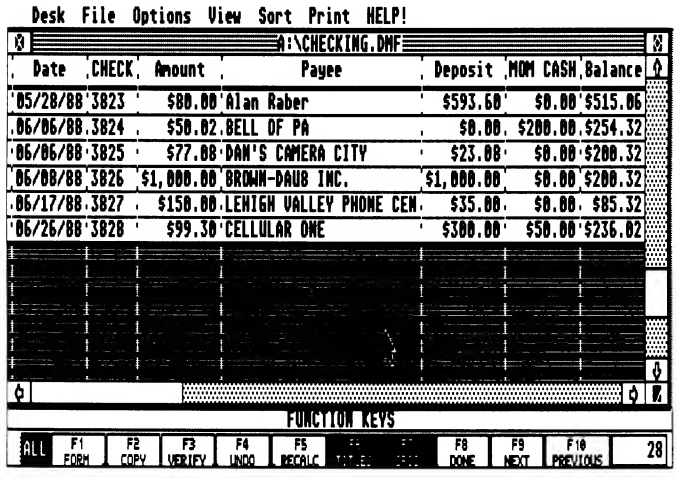



Figure #2

# The Tale of Three GFA Basic Books

## by Charles Baily

At a recent club meeting I was given the opportunity to review Abacus' new book "GFA BASIC, quick program reference guide for the ATARI ST." This was just in time because I

was giving some thought to purchasing one for myself. The main reason I haven't, is because I recieved the "GFA BASIC BOOK" by Michtron for Christmas and have not digested enough of that book to warrant the purchase of another book on the same subject.

The Abacus book assumes, that you have a general knowledge of and some experience working with the ATARI ST and GFA BASIC." Now this would normally mean that there is going to be some high powered stuff in this book. Well I was wrong, in fact after the first glance I was somewhat disappointed. It takes some reading and comparing this book with the others to notice there is a difference. Aside from a couple of Bios and Xbios commands not in the manual, but covered in the GFA BOOK, it is written in a manner that in some cases it makes some commands a little more clear. It also has three different types of indexes to help find the command you are looking for.

The key word in the title is REFERENCE, so why do they make such a book in a tightly bound paper back with small print, two and sometimes three commands per page, no room or pages for notes and only a few examples.

Have you ever tried to hold open such a book and type something into the computer at the same time? Give me a loose leaf book that will lay open flat anytime. At this point it is only fair to add that the GFA Basic Book and manual are also paper back books. The original manual was a loose leaf, why they switched to a paper back book when they updated it I'll never know.

Again, you must remember it is only a reference book and there are no usage hints or tutorials. If I were to spend $14.95 on a book that has neither of these it would mean I must know my way around the language good enough that I wouldn't need a reference book. What has happened is, that I was forced into reviewing all three books and I determined that Abacus' book came third place. The bottom line is I am not going to purchase Abacus' book for myself. I cannot recommend this book over the manual and/or Michtron's book.

I would recommend that you save the price of this book and put it towards Michtron's Book, which is full of tips and hints, even if some of them are above the average amateur programmer, such as myself. It comes with a disc loaded with LIST and demos. It also carries a complete listing of Bios and Xbios commands with some examples.

As for reference,I would use the manual which has one command per page, along with examples, larger print, and a couple of blank pages in the back of the book, and room on most pages for notes.

I am returning the book to the club library where it will be available for your review. If you find that it will be useful and worth $14.95, by all means buy it. Myself, I'll stay with the manual, Michtron's Book, tutorials in the ST LOG and other magazines, and a lot of trial and error.

# Epson MX80 Speed Up

## by Earl Kurtz

Do you own an Epson Mx-80 printer? How would you like to increase it's speed by 50%. This would equal or surpass the speed of an RX-80.

Turbo Printer products is selling a hardware modification to be made to the MX-80 motherboard. Because the change is in the printer itself and not the software, it is totally transparent to your software. You are simply con-

necting a faster printer to your computer.

The modification to the MX-80 mother-board involves replacing two crystals. The Speed Up Kit includes two modules (crystals) and the installation instructions.

The instructions of the kit have you remove the top cover, removed the screws holding the mother-board in place, locate the crystals and replace them with the two modules supplied in the kit. The instructions suggest merely cutting out the crystals and tack soldering in the new ones. This is a safe way and does not require complete removal of the mother-board. However, if you have some technical knowledge, removal of the mother-board is possible by disconnecting all the plugs attached to this board. When the mother-board is removed, a desolder device can be used to remove the old crystals.

After I completed the installation of the Speed Up modules, I was ready for a test of my old, but faster MX-80 printer. I first used the self test of the printer to check for normal operation. My printer still was working, but it did sound faster.

To test the speed of the printer, I loaded my word processor in my computer and then printed a single sheet of paper, an average letter. The before time was one minute and six seconds. The Speed Kit printed the same letter in forty-eight seconds.

The kit costs $25.00. Any one interested in purchasing this kit can contact me at 215-282-1896. These kits are sold for self installation or I can install them for local buyers.

Also included in the Speed Up Kit is a write up about preventive maintenance of MX-80 and MX-100 matrix printers. I am including this procedure for those people who will not purchase the Speed Up Kit.

Care and Feeding for the Matrix Printer

1. You've probably noticed by now that the print head itself is almost indestructable. What you may be missing, though, is the fact that print quality produced by the head is slowly degrading. You can't stop it, but you sure can slow it down.

At least every six months, remove the head and clean it with a spray solution safe for electronics. We use a freon based spray available at most electronics stores.

Be sure to spray out the area in the front of the head where the print wires come through.

Apply a light coating of lubrication (spray) on the front of the head, taking care to get the solution into the wire area as much as possible.

Set the head aside for now.

2. The next highest wearing area of most printers is the head-carrier assembly. Most wear occurs where the brass bushing rides the steel rod as the head moves back and forth across the platen.

Move the head-carrier assembly (the head is still off) to the middle of the printer. Spray both sides of the brass bushing where it contacts the rod. While doing this, slide the head back and forth to get the cleaner underneath. Wipe up the excess spray.

Apply a light-weight grease (we use #23) to the rod. Don't use a lot, a small drop will cover the entire shaft more than adequately. Slide the head back and forth to work the grease under the brass bearing. You will probably notice the grease getting dirty. The intent is to "drap" out some of the sludge under the bearing. Wipe off all of the grease and repeat the process a few times.

The last step is to put a final coat of grease on the rod and then "WIPE IT ALL OFF!!" You won't be able to get it all off; the little that remains is all you need. Too much will just collect dirt and paper dust.

3. Vacuum out any excess dust and dirt, put it all back together and wipe off the case with

mild soap and water. Congratulations, you just added years to your printers' life.


## A column by Tony Smolar

Video Tips

Ever want to hook your VCR to a composite monitor or computer? Did you ever think that The picture your computer put on the television was the best it could do on a TV? This Article will show you how to make the connections and get a better picture and sound on your TV!

This month, Hints Tricks and Tips will be dedicated to Video Output Tips. It will show you how to hook your computer to your VCR and get a better quality picture and sound at the same time! It will even explain how to hook a VCR to a composite monitor. One thing that should be pointed out before I begin is that the Atari 400 and 600XL do not have composite output so you will be limited to useing the RF modulator when connecting a VCR. Also these tips apply to the ST's. Some 520's have an RF Modulator, these also have composite output, but it is through the 13-pin monitor port so you will need to make a special cable or buy a product like "Monitor Master" to use this.

For the rest of the ST's, there is now a device called the Video Key (See review elsewhere) which gives RF modulated output to ST's without a built in RF modulator!

The First way to connect your computer to a VCR is the most obvious one. It also has the worse results of the two. It involves taking the switch box from the back of the TV and connecting it to the The Cable/Antenna in port on the back of the VCR. If these ports are the round coaxle type, you will need a plug to convert the two lead wires to a coaxle connector. TV's and VCRs often come with these,they are also widely availible in Department and Electonic stores. run a cable from the cable/ antenna out port to the back of the Television. If you have a cable or antenna wire, it can be hooked to the other side of the switch box. Now the connection should be complete. Turn on your VCR and Set the TV/VCR switch for VCR. Set the channel to two or three depending on which your computer is using. If the picture doesn't look sharp you may have to adjust the Fine tuning on your VCR to get a better picture. The picture may be slightly inferior to what you were getting before, but if you set your TV/VCR Switch to TV, the picture will be as good as it was originally. When recording, make sure that the VCR is on the right channel even if the TV/VCR is set to TV.

The Second and better way is to use the monitor port on the back of your 8-bit, or the composite outputs on your ST(See note Above) or with The Video Key. First on the 8-bit, you need a 5-pin D.I.N. monitor plug long enough to reach from your computer to the back of the VCR. One end of this plug should have four RCA connectors in four colors (Red, White, Blue, and Yellow). Plug the white plug into the "Audio In" port on the VCR, and the blue plug to the "Video In" port. There is a potential problem here in that some, if not all VCRs, will, when they detect plugs in the Audio and Video

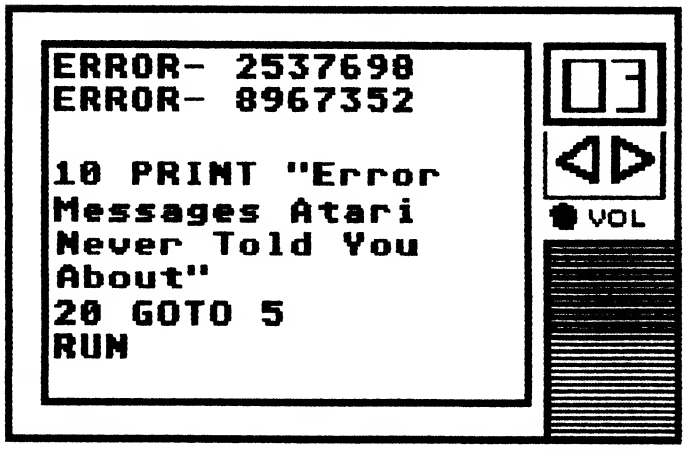
in ports, will expect all input from those ports which means the screen will be blanked and the sound will be off when the computer is off, so when you want to watch TV, you will have to remove these.

On the ST, all you do is run an RCA Cable from your custom monitor cable, Video Key, Etc. to the Video in port, and do the same for Audio.

You now have a complete connection. To Use this configuraton, turn on your VCR and Set the TV/VCR switch to VCR, Any Channel will do. Turn on your computer.

S U R P R I S E ! ! ! You WILL have a clearer picture with less color Smear, and Clear, Crisp Audio with the sound boosted, especially in the higher frequencies, it is quite an improvement over the RF modulator.

And lastly all you do to hook a VCR to a composite monitor is to Run two RCA cables from the Video and Audio out ports on the VCR up to the respective plugs on the monitor. There, wasn't That Simple? You can now use that monitor as a TV set!!!




Reprinted from the MACE Journal Vol. 5 No. 6

Note: The following error messages result from external malfunctions, including operator error, and are only implemented on machines containing the experimental PSI (Pretty Small Integrated) chip. To determine if your machine has the PSI chip installed, set up a look to read location 53770 ($D20A), the random number generator. Concentrate on a number between 0 and 255; if you can force the output of 53770 to equal your chosen number more than 87.4% of the time, you are one of the lucky few with a PSI chip.

ERROR 256- Operator Negligence You failed to stare intently at your 410 or 1010 recorder during the entire CLOAD process. Rewind the tape to within .01mm of the original recording position, take a deep breath, and hold it while watching the tape grind through the recorder. It has been shown that blinking during a cassette load can set up shock waves sufficient to knock the tape head out of alignment and abort the load.

ERROR 257- Keyboard Adhesion Error There is peanut butter or some other sticky substance underneath the keycaps. (This error does not occur on Atari 400's with the original membrane keyboard.) You can try to pry off the keycaps yourself and clean up the mess, or face ridicule by bringing your machine to the service department of your local computer store.

ERROR 258- Disk Damage Error Your toddler has been trying to play your disks on his Fisher- Price Record Player. This error can also occur when disks have been used as Frisbees, coasters, or to jimmy a lock.

ERROR 260- TMF Error A Transient Magnetic Field has erased all of the data on your disks and/or tapes. You are now the owner of lots of flat plastic squares which can be used (with little success) to tile your rec room floor; or, if you use tapes, several stocking stuffers for your kids.

ERROR 261- Release Data Shock A previously announced Atari product has been released on time; the shock was too much for your computer, which will be inoperative for the next three months, thereby bringing things back to normal.

ERROR 262- Poor Programming Technique You

have annoyed your BASIC cartridge by writing "spaghetti code," full of tangled GOTO statements. In retaliation, it has renamed all of your variables to end-of-lines (CHR$(155)). No recovery possible.

ERROR 263- Late Night Error This error most often occurs at about 4 am and is due to the fact that the computer is being put to sleep by your yawns. Grinding No-Doze between the cartridge and its connectors will prevent the error, as it will totally disable your system and you will be able to get lots of sleep in the next few months while you are waiting for your machine to be repaired.

ERROR 264- FED Detected A FED (FBI Electronics Department) has tapped into your phone line and is monitoring your private downloads. For $59.95 (plus $2.00 shipping and handling) you can buy an Honesty Chip which will immediatly switch the transmission to a public domain program. The Honesty Chip is availiable from I.M. Cott, Cell Block 534, San Quentin, CA 94013

ERROR 265- CWI Error You are guilty of Computing While under the Influence of certain substances. Power down and wait for operator detoxification before attempting further operation.

ERROR 266- Malfunction Timeout It has been too long since an error has occured, so the Error Generator, ERRGEN, at location 49155 ($C003) has chosen to spice up your life. This error is seldom seen because of the unlikelihood of operating your computer for more than 15 minutes without an error.

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**"...unlikelihood of operating your computer for more than 15 minutes without an error."**

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## Next Issue:

**The Video Key**
**New Columns**
**Help Key II**

***and much much more!!!!***

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## Advertising Rates

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| 1/4 Page | $15 |
| Half Page | $25 |
| Whole Page | $40 |

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## *Classifieds*

**For Sale:**

**Avatex HC modem, Atari SX212. Both are 1200 baud and Hayes compatible. Call (215) 797-5865 and ask for Pat.**

# ABE's ACEs

Allentown Bethlehem Easton's Atari Computer Enthusiasts is an independent user group organized and run by owners of Atari Computers. Atari is a trademark of Atari Corp.; all references should be so noted.

If you would like more information about ABE's ACEs, write us at the club's address or call the club HOTLINE at the number listed on this page.

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Submissions to the newsletter may be made via the club's BBS, via mail, or at the general meetings.

# Club Numbers

| | |
|---|---|
| Help Key II BBS: | |
| Direct Line | (215) 759-2683 |
| Call Forwarding | (215) 821-9222 |
| Hotline (Voice) | (215) 799-2228 |

# E-Board

| | |
|---|---|
| President | Paul Grover |
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| Secretary | Robert MacGregor |
| | (215) 538-1441 |
| Treasurer | Clay Wagner |
| | (215) 837-8245 |
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| | (215) 395-1676 |
| Librarian | Eric Brodeur |
| | (215) 536-6912 |
| Newsletter Editor | Joe Souder |
| | (215) 253-4466 |

# Library Staff

| | |
|---|---|
| Paper Library | Greg Lukow |
| 8 Bit Master Disks | Charles Derk |
| 8 Bit Disk Duplication | John Douglas |
| 16 Bit Disks | Chris Andrews |

# Newsletter

| | |
|---|---|
| Co Editor | Tony Smolar |


ABE'S ACE'S
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FIRST CLASS MAIL

# ABE's ACEs

## Meeting Notes

At the July meeting a new meeting format was proposed.

The new format will be tried at the August meeting (August 13th) and all members are asked to respond.

The schedule will go something like this:

| | |
|---|---|
| **12:30 PM** | **Doors Open** |
| **1:15 PM** | **8 bit IO/Demo** |
| **2:00 PM** | **Club Business** |
| **2:15 PM** | **16 bit IO/Demo** |